Ex-3000 Series

Product Data Sheet

Installation and Commissioning of Ex-3001 Extinguishing Control Panel

The operation and functions described in the manual are available from Software Versions Ex3001_V1_02 onwards.

Item	Specification Details
	EX-3001
Enclosure	Steel IP30
Dimensions H x W x D mm	330 x 400 x 90
Environmental Class	Class A – Indoor IP30 0°C to 40°C
Humidity	95 % Max
Weight (excluding batteries)	5.1Kg
Cable Entries (20mm knockouts)	17x top and 13x top rear
Mains Supply	200V-240V (+10%, -15%), 50/60Hz AC, 1.0A max
Power Supply	24V DC, 3A High Efficiency Switched Mode [2A load, 1A battery charging]
Battery Capacity	24V 4Ah Internal (min), 24V 7Ah Internal (max)
Charging Current	1.0A Temperature Compensated (27.4V DC nominal at 20°C)
Number of Fire Zones	3
Number of Flooding Zones	1
Actuator Output	24V DC, 1.0A suitable for either Metron or Solenoid
Sounder Outputs	3x rated at 1A each programmable
Relay Outputs	4x rated at 1A 30VAC/DC (max) 10mA 5V (min) [2x Fixed – Fire / Fault, 2x Programmable]
Relay Outputs (Optional)	8x rated at 1A 30VAC/DC (max) 10mA 5V (min) programmable (requires MXP-008)
Key-Switches (Optional)	2x Programmable
External Inputs (Monitored)	7x Fixed (Mode, Manual Trigger, Hold, Abort, Flow Monitor, Valve Monitor, Pressure Monitor) 4x Programmable
AUX Supply Output	24V DC, 0.5A
Communications	RS485 to Remote Status Indicators
Display	Graphic LCD 124x64 dots
LED Indicators	26
Event log	100 Fire / Trigger Events, 500 General Log Events
Approvals (pending)	BS EN 12094-1: 2003, BS EN 54-2: 1998 +A1, BS EN 54-4: 1998 +A2
As our policy is one of constant product improvement the right is therefore reserved to modify product specifications without prior notice	

Table of Contents

1 INTRODUCTION 5

1.1 Standards 5
1.2 Cautions and Warnings 5
1.3 Description 5
1.4 EN54 Functions 6
1.5 EN54 Optional Features with Requirements 6
1.6 EN12094-1 Optional Features with Requirements 7
1.7 Installation Approvals 8
1.7.1 Fire System Installations 8
1.7.2 Wiring Regulations 8

2 INSTALLATION 9

2.1 Identification of Parts 9
2.2 Installing the back box 10
2.3 Wiring Installation 11
2.3.1 AC Mains Wiring 11
2.3.1.1 Cable Gland 11
2.3.2 Battery Wiring 11
2.3.3 24VDC Power Supply Wiring 12
2.3.4 External Wiring 12
2.3.4.1 Relay Outputs 13
2.3.4.2 RS485 Communications 13
2.3.4.3 AUX DC Supply Output 14
2.3.4.4 Detection Zone Inputs 14
2.3.4.5 Sounder / Monitored Output Circuits 15
2.3.4.6 Input Circuits 16
2.3.4.7 Actuator Output Circuit 17
2.3.4.8 USB 18
2.3.4.9 Recommended Cable Routing 18
2.4 Key-Switch Installation 19
2.5 Adjusting the LCD Contrast 19
2.6 Loading Calculations 20
2.6.1 Panel Loading 20
2.6.2 Battery Standby Calculation 20

3 PROGRAMMING 21

3.1 Introduction 21
3.1.1 Access Levels 21
3.1.2 Front Panel Controls and Indications 21
3.1.3 Enable Controls 22
3.1.4 Navigating through menus 22
3.1.5 Numeric data entry 23
3.2 Recommended Programming Procedure 23
3.3 Level 3 Menu Functions 23
3.3.1 Detection Zones 24
3.3.2 Alarms 24
3.3.2.1 Sounder Configuration 24
3.3.2.2 Pulse Pattern Configuration 25
3.3.3 Extinguishing 26
3.3.3.1 Output Set-Up 26
3.3.3.2 Cause and Effects Programming 27
3.3.3.3 Extract Set-Up 27
3.3.3.4 Release Signal Termination (Test Function) 29
3.3.4 Inputs 29
3.3.5 Outputs 29
3.3.5.1 Switched AUX Output 30
3.3.6 Passwords 31
3.3.6.1 Default Passwords 31
3.3.7 General Options 31
3.3.7.1 Daylight Saving Options 32
3.3.8 Status Indicators 33
3.3.9 Enable PC LINK 33

3.3.10 Exit 33

4 SERVICE AND MAINTENANCE 34

4.1 Maintenance Schedule 34
4.1.1 Daily Actions 34
4.1.2 Monthly Actions 34
4.1.3 Quarterly Actions 34
4.1.4 Annual Actions 34
4.2 Replacement of Components 35
4.2.1 Batteries 35
4.2.2 Liquid Crystal Display 35

5 APPENDICES 36

5.1 Appendix 1 – Forgotten Level 3 Password 36
5.2 Appendix 2 – Compatible Devices 37
5.2.1 Detectors 37
5.3 Appendix 3 – Recommended Cables 39
5.3.1 Fire Rated Cables 39
5.3.2 Non-Fire rated cables 39
5.4 Appendix 4 – Troubleshooting 40

1 Introduction

1.1 Standards

The *Ex-3000* Gas Extinguishing Control Panel conforms to the following standards:

BS EN12094-1: 2003	Extinguishing Control Device
BS EN54-2: 1998	Control and Indicating Equipment
BS EN54-4: 1998	Power Supply Equipment
BS EN60950: 2000	Safety of information technology equipment
BS EN50130-4: 1996	Product Family Standard

Electromagnetic Compatibility Directive 89/336/EEC (and the amending directive 92/23/EEC)

Low Voltage Directive 73/23/EEC

1.2 Cautions and Warnings

BEFORE INSTALLATION – Refer To the Ratings shown on the label inside the product and to the 'Specifications Chart' in this document.

Please read this manual carefully. If you are unclear on any point DO NOT proceed. Contact the manufacturer or supplier for clarification and guidance.

Only Trained service personnel should undertake the Installation, Programming and Maintenance of this equipment.

This product has been designed to comply with the requirements of the Low Voltage Safety and the EMC Directives. Failure to follow the installation instructions may compromise its adherence to these standards.

This equipment is constructed with static sensitive components. Observe anti-static precautions at all times when handling printed circuit boards. Wear an anti-static earth strap connected to panel enclosure earth point. Before installing or removing any printed circuit boards remove all sources of power (mains and battery).

1.3 Description

This manual covers the installation, programming and commissioning of the *Ex-3000* Series Extinguishing Control Panels. Refer to the User Manual (Document No. 680-148) for details of how to operate the panel.

The *Ex-3001* is a Single Flooding Zone Control Panel with up to three detection zone circuits.

The detection zones are compatible with conventional detectors and call points. Refer to the compatibility section for full details of the compatible devices tested.

Install the panel, detection circuits, sounder circuits, etc. in accordance with the instructions in Section 2 and then program the operation in accordance with the instructions detailed in Section 3.

1.4 EN54 Functions

EN 54 ✓	**This Control Panel is compliant with the requirements of EN54 parts 2 and 4 (1997). In addition to the basic requirements, the following optional functions are provided and these comply with the requirements of EN54.**

EN 54-2 ✓	**CIE Optional Functions**		**EN54-2 Clause**
	Indication	**Outputs to Fire Alarm Devices**	**7.8**
	Outputs	**Co-incidence Detection**	**7.12**
	Controls	**Alarm Counter**	**7.13**
		Test Condition	**10**

EN 54-4 ✓	**P.S.E Functions**	**EN54-4 Clause**
	Operation from a main power supply	**5.1**
	Operation from a standby battery	**5.2**
	Monitor and Charge the Standby Battery	**5.3**
	Recognise and Notify Supply Faults	**5.4**

EN 54 !	**This Fire Alarm Control Panel also supports additional functions that are not covered by EN54. These are as follows:**	
	Additional Function	**Refer to Paragraphs**
	Auxiliary Power Supply Output	**2.3.4.3**
	Auxiliary Relay Outputs	**2.3.4.1**

1.5 EN54 Optional Features with Requirements

In addition to the mandatory requirements of EN54 Part 2, the Control and Indicating Equipment (CIE) supports the following optional features with requirements: -

EN 54-2 ✓
Section 7.8

Outputs to Fire Alarm Devices.

The CIE has provision for connection to Fire Alarm Devices. It is possible to Silence and Resound the alarms at Level 2. Refer to the User Manual for further information. Refer to Sections 2.3.4.5 and 3.3.2 for information on installation and output programming.

EN 54-2 ✓
Section 7.13

Alarm Counter.

The CIE has provision record the number of times that the fire alarm condition is entered. Refer to the User Manual for further information.

Section 10

Test Condition.

The CIE has provision for testing the installation on a per zone basis. Refer to the User Manual for further information.

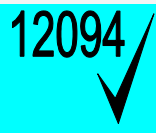
1.6 EN12094-1 Optional Features with Requirements

In addition to the mandatory requirements of EN12094-1, the Extinguishing Control Device (ECD) supports the following optional features with requirements: -

Section 4.17

Delay of Extinguishing Signal.

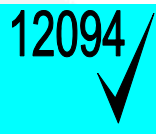
The ECD has provision to delay the transmission of the extinguishing signal. This can be programmed in 1-second intervals up to a maximum of 60-seconds. Refer to Section 3.3.3.1 for programming.



Section 4.18

Monitor Flow of Extinguishing Agent.

The ECD has provision to monitor the flow of the extinguishing agent once released. One fixed input is provided. Programmable inputs can also be configured as hold inputs. Refer to Sections 2.3.4.6, 3.3.4 and 3.3.3.1.



Section 4.19

Monitor of Status of Extinguishing Components.

The ECD has the provision to monitor the status of extinguishing components such as loss of agent, temperature, etc. Refer to Sections 2.3.4.6, 3.3.4 and 3.3.3.1.

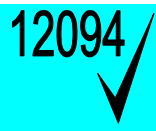
Means shall be provided to transmit the information concerning the blocked position of a manual control device. Refer to sections 2.3.4.1 and 3.3.5 for further information.

Section 4.20

Emergency Hold Device.

The ECD has provision for an emergency hold device. Refer to Sections 2.3.4.6, 3.3.4 and 3.3.3.1.

Means shall be provided to transmit the information concerning the activation of an emergency hold device. Refer to sections 2.3.4.1 and 3.3.5 for further information.



Section 4.21

Control of Flooding Time.

The ECD has provision to control the duration of the flooding time. Refer to Section 3.3.3.1 for programming.

Section 4.23

Manual Only Mode.

The ECD has provision to switch from Auto/Manual to Manual Only means of establishing the extinguishing signal. This can be by Level 2 User Menu Option, fixed input, programmable input or by Key-Switch Option. Refer to Sections 2.3.4.6, 3.3.4 and 3.3.3.1.

12094

Section 4.24

Triggering Signals to Equipment within the System.

The ECD has provision to transmit triggering signals to extinguishing system equipment such as pilot cylinders, warning devices, etc. Refer to Sections 2.3.4.5 and 3.3.2.

These circuits are required to be monitored for fault conditions by the ECD.

12094

Section 4.26

Triggering Signals to Equipment outside the System.

The ECD has provision to transmit triggering signals to other equipment such as doors, ventilation shut down, etc. Refer to Sections 2.3.4.1 and 3.3.5.

These circuits are to be monitored for fault conditions by the receiving device.

12094

Section 4.27

Emergency Abort Device.

The ECD has provision for an emergency abort device. This can be by fixed input or programmable input Option. Refer to Sections 2.3.4.6, 3.3.4 and 3.3.3.1.

Means shall be provided to transmit the information concerning the activation of an emergency abort device. Refer to sections 2.3.4.1 and 3.3.5 for further information.

12094

Section 4.30

Activation of Alarm Devices with Different Signals.

The ECD has provision to activate sounding devices with different signals to indicate the pre-discharge warning condition (pulsing, 1s/1s), the release condition (continuous) and the hold condition (pulsing, 1s/4s). Refer to Sections 3.3.2.1 and 3.3.2.2.

1.7 Installation Approvals

1.7.1 Fire System Installations

The panel must be installed and configured for operation in accordance with these instructions and the applicable code of practice or national standard regulations for fire systems / extinguishing system installation (for example BS5839-1: 2002, BS7273-1: 2006) appropriate to the country and location of the installation.

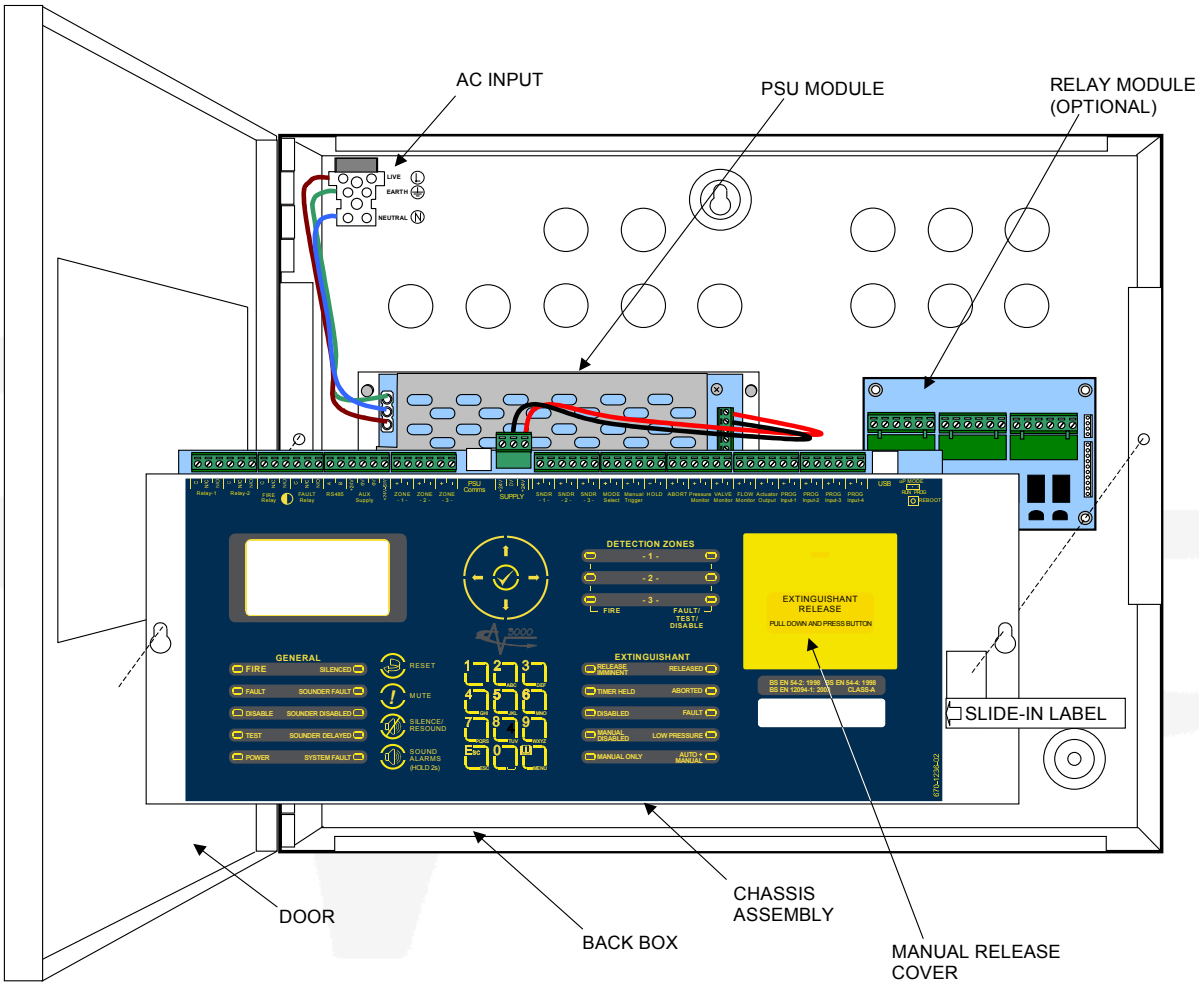
1.7.2 Wiring Regulations

The panel and system must be installed in accordance with these instructions and the applicable wiring codes and regulations (for example BS7671) appropriate to the country and location of the installation.

2 Installation

2.1 Identification of Parts

The following diagram shows the major parts of the panel.



The panel comprises a back box, door, chassis assembly and PSU module.

The chassis is mounted onto the back box via two screws and keyhole mounting holes. The screws do not have to be removed to remove the chassis.

The chassis contains the main printed circuit card with terminal block connections for field wiring. A fascia label is affixed to the front of the chassis providing the user controls and indications (LCD and LED indicators). A hinged yellow plastic cover is fitted to the front face and provides access to the manual release button.

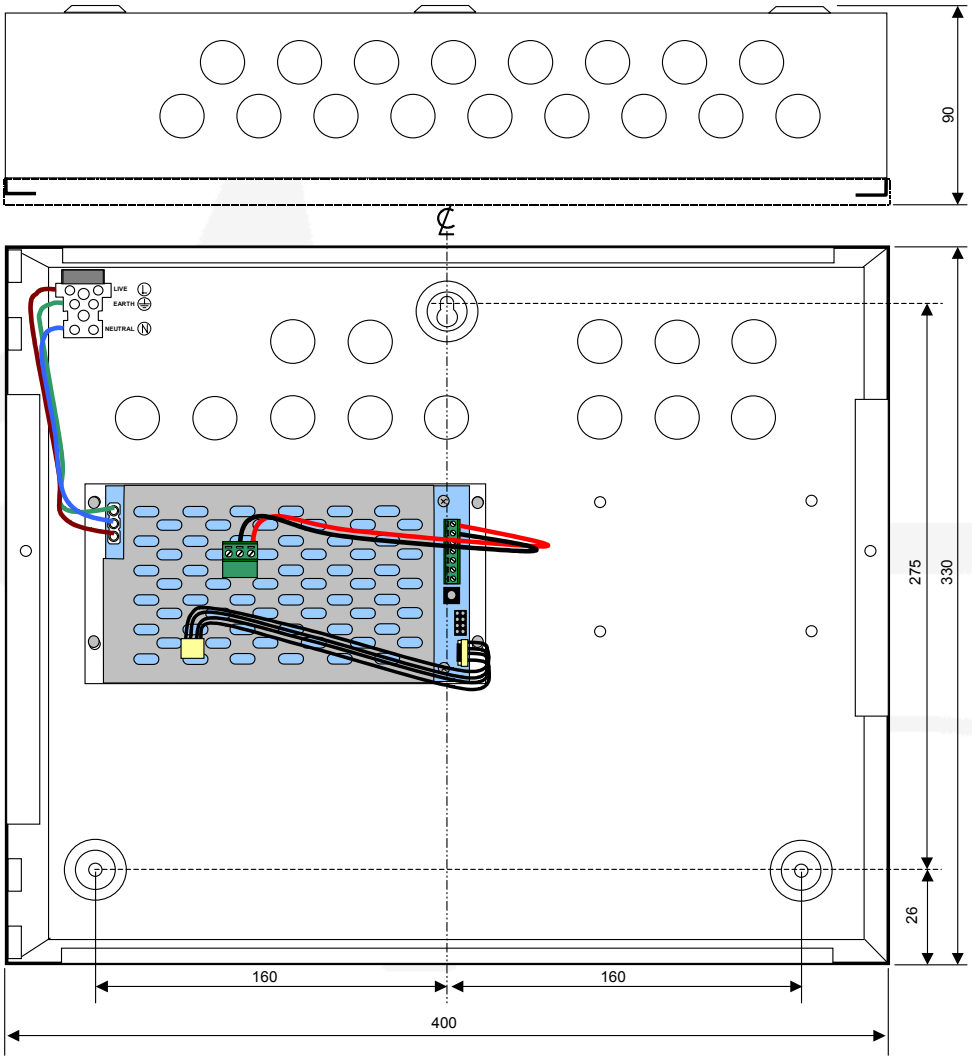
The PSU module converts the in-coming AC Supply to 24V DC (nominal) and provides battery charging. The PSU is connected to the chassis via a DC Cable and a serial communications cable. The PSU design is to BS EN54-4: 1998 +A2 and provides monitoring for AC failure, battery missing, battery low, charger failure and battery internal resistance.

Standoff pillars are provided in the back box to fit a standard Mxp-008 8-Way Relay Module. This is connected to the main printed circuit card via ribbon cable.

Up to two (programmable function) key-switch assemblies can be fitted to the chassis plate below the manual release cover. The cables plug onto the main printed circuit card. Slide-in labels with pre-printed text are available.

2.2 Installing the back box

Enclosure dimensions and fixing points are shown in the diagram below. Remove the chassis before installing the enclosure (retain in a safe place).



When batteries are installed, the Ex-3000 can weigh in excess of 10Kg. Use appropriate fixing hardware to secure the panel to the wall.

For example, drill the required holes in the supporting wall using a drill bit diameter 7.0 mm and plug with a suitable 40mm long expansion plug. Affix the panel to the wall with M5 screws (length 40mm) or No.10 screws (length 1½").

Ensure that there is sufficient space to allow the cover to be removed / opened when the panel is finally mounted.

2.3 Wiring Installation

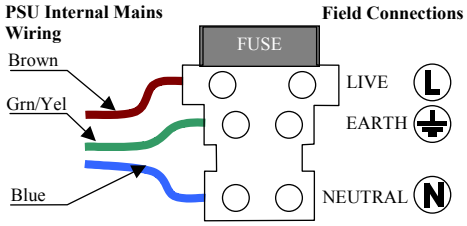
2.3.1 AC Mains Wiring

The power supply is classified as Class1 equipment construction and must be earthed in accordance to EN60950 recommendations.

Route the high voltage mains AC wiring into the enclosure using a suitable knockout and keeping the AC wiring away from any circuit boards and all other wiring.

The panel must be connected to the supply earth through the power cable.

The mains input connector is shown in the diagram opposite. Note the positions of the earth, neutral and live terminal connections.



AC Mains terminations

These are clearly marked on the label next to the connector. The connector block contains an integral fuse holder for a 20mm fuse.

Secure the mains input wiring using a tie wrap as close to the terminal block as possible.

The fuse is rated as follows:

T 3.15A H 250V

Replace with correct rating and specification only.

Connect the EX-3000 to the mains supply via a readily accessible, disconnect device (Isolation Switch) and suitable earth fault protection incorporated in the building installation wiring.

The Mains cable should be a minimum cable size of 0.75mm² rated at 250V and fused via a 5A anti-surge fuse. Maximum cable size is limited to 4mm².

Keep all mains wiring separate from the Extra Low Voltage (ELV) battery cables and power supply output cables.

2.3.1.1 Cable Gland

The cable gland and any cord clamp bushings used in routing the Mains cable through the 20mm knockout must have a minimum flame-retardant rating of 94HB.

Suggested glands and bushings are: -

Type	Manufacturer
Gland IP65 – Brass M20, EExd / Eexe	Lappcable
Gland IP68 – Nylon 66 M20 Black, UL94V2	Multicomp
Bushing – Nylon 66 M20 Black, UL94V2	Multipcomp

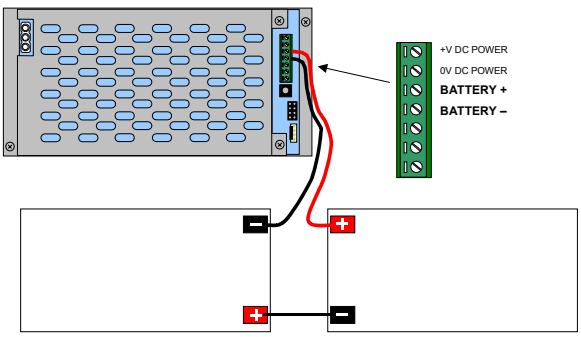
2.3.2 Battery Wiring

The system is designed to charge 24V batteries or two 12V batteries connected in series. Refer to diagram opposite.

Use the short black connection link to connect the batteries.

Use the Red & Black leads provided to connect the batteries to the **BAT+ & BAT–** terminals on the PSU module.

Mount the batteries on the bottom of the enclosure.



OBSERVE POLARITY OF CONNECTIONS!

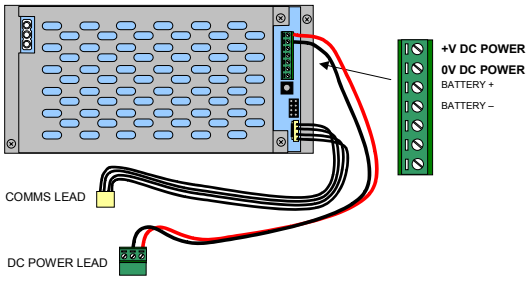
2.3.3 24VDC Power Supply Wiring

The main printed circuit card on the chassis is supplied with 24V DC from the power supply.

In addition, the operating status of the power supply is communicated to the main electronics via a serial link.

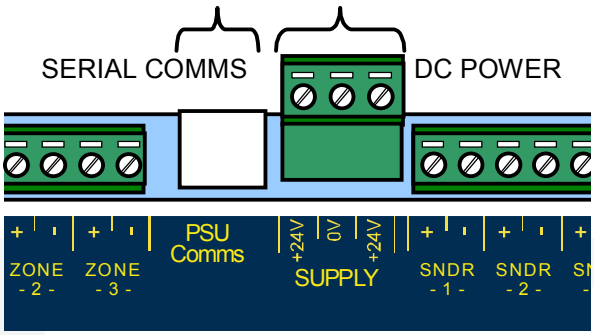
The two cables are fitted as standard and plug onto the main printed circuit card.

Refer to diagrams opposite.



To remove the chassis assembly, disconnect the two cable plugs from the chassis card itself. There is no need to remove the wiring from the power supply.

Note: If wired correctly, the DC Supply plug is reversible without presenting a danger of polarity reversal.



OBSERVE POLARITY OF CONNECTIONS!

2.3.4 External Wiring

Install cables suitable for the application and degree of fire protection required.

All input and output circuits are SELV type.

To maintain electrical integrity of the SELV wiring on the output lines all SELV wiring should be segregated from the LV mains wiring and be wired using cable with insulation suitable for the application.

NB: Minimum / Maximum cable size for all connections is limited to 0.35mm² / 2.5mm² (22-14AWG).

Any specific recommendations are detailed below for each type of circuit.

Refer to the Recommended Wiring Routing section for details of cable routing within the enclosure.

General Notes

All electrical wiring installation work should be carried out in accordance with the code of practice applicable in the country of installation.

To minimise the effects of EMC interference all data wiring circuits should be wired with a twisted pair of conductors with a cross sectional area suitable for the loading conditions.

In areas where cabling may come into contact with high frequency interference, such as portable radio transceivers etc. the output wiring cable should be of a twisted pair construction within an overall screen. The screen should be terminated to one of the dedicated earth studs available in the panel.

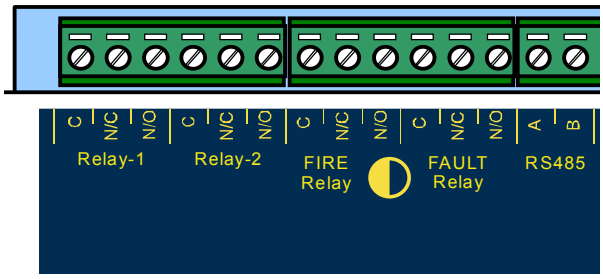
2.3.4.1 Relay Outputs

EN 54-2 Section 8.8

Fault Output.

The Fault Relay is arranged for failsafe operation as standard.

The panel is equipped with four relay outputs. See diagram opposite for terminal block positions.



Each output is unsupervised with volt-free changeover contacts rated at 30V AC/DC, 1A, resistive.

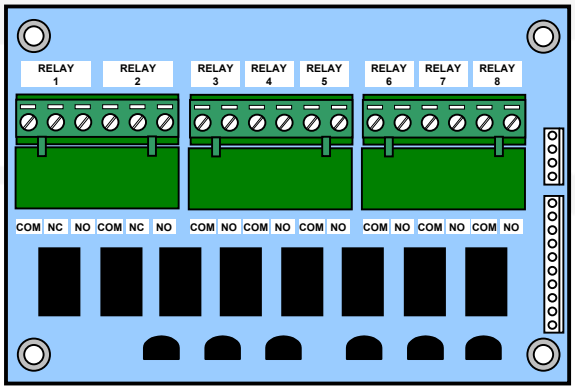
The Fault and Fire Relays are fixed to indicate their respective conditions.

The Fault relay is normally activated. It will de-energise on any fault condition including total loss of power.

Relay outputs 1&2 are programmable.

Additional Relays

If additional relays are required, then install the Mxp-008 8-Way Relay card in the rear of the enclosure.



Mounting pillars are provided. Affix the card with the supplied M3 fixing screws.

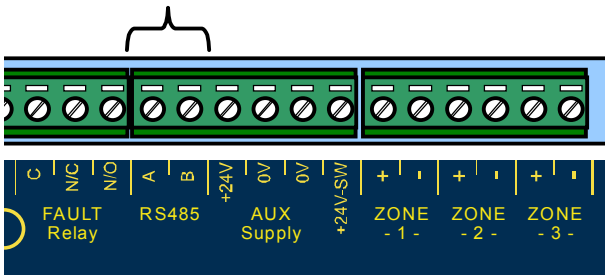
Connect the 10-Way ribbon cable between the relay card and the main chassis card – the connectors are polarised to prevent incorrect connection.

Two changeover and six normally open volt-free relay outputs are provided. Each is rated at 30V AC/DC, 1A, resistive.

All Relay outputs are programmable.

2.3.4.2 RS485 Communications

One RS485 bus circuit is provided for connection of local peripheral devices such as Remote Status Indicator panels.



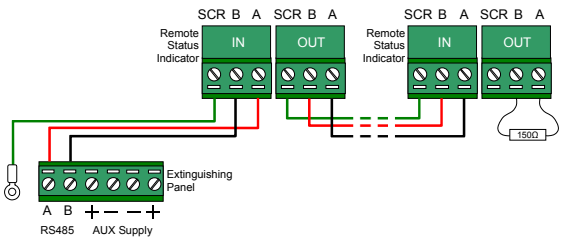
SUPERVISED. POWER LIMITED.

CCITT RS485 – Style 4

Wiring to be twisted pair and screened.

Maximum distance 1000m. Maximum line impedance 50Ω.

Connect the cable from 'A' to 'A' and from 'B' to 'B'. Equipment is connected via a daisy chain. A 150Ω End-of-Line resistor to be fitted at last unit.

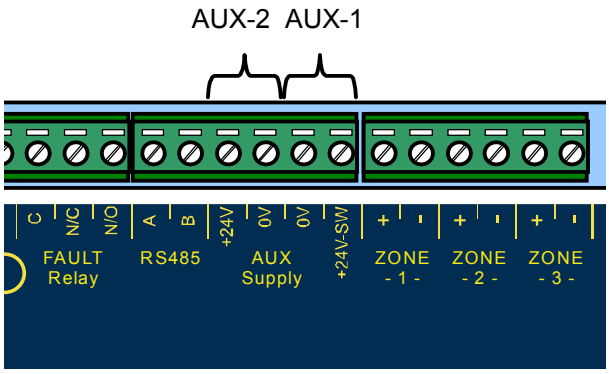


Connect the screen to one of the earth studs in the back of the panel enclosure and to the designated point in the remote status indicator panels. Ensure the screen is continuous.

2.3.4.3 AUX DC Supply Output

Two Auxiliary Power Outputs are provided.
18.0 – 28.0 V DC, 0.5A[1]
SUPERVISED. POWER LIMITED.

AUX #1 : 4-Wire Smoke Detector Power or other similar application. Power turns off for 10-15 seconds on reset.
AUX #2 : 24V DC (nominal) power output for external equipment (remote status indicators)[2].



Use appropriately sized cable for the current load to ensure device compatibility.

2.3.4.4 Detection Zone Inputs

EN54-2 Section 12.5.2

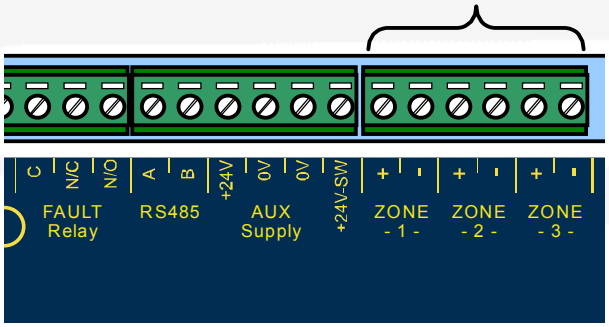
In accordance with EN54-2, a maximum of 32 detectors per zone only.

Three conventional detection zone inputs are provided. These are nominally 20V DC circuits and are current limited.

The circuits are monitored for open and short circuits. For normal monitoring, a 6800Ω End-of-Line resistor is required.

The circuit is designed to be compliant with conventional detectors and call points with an equivalent series resistance of 470Ω/270Ω respectively.

If using devices that apply a short across the zone circuit, refer to Section 3.3.1 for how to configure this use.

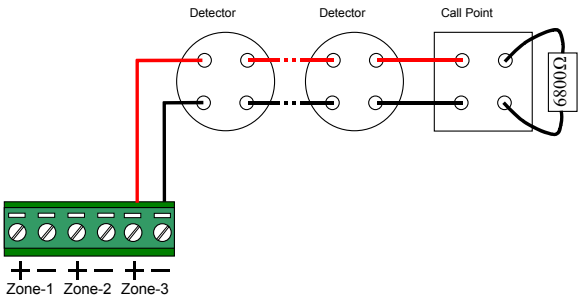


2.3.4.4.1 Standard Arrangement

Connect the detectors and manual call points (if required) in series with no spurs.

Connect the en-of-line resistor across the terminals of the last device.

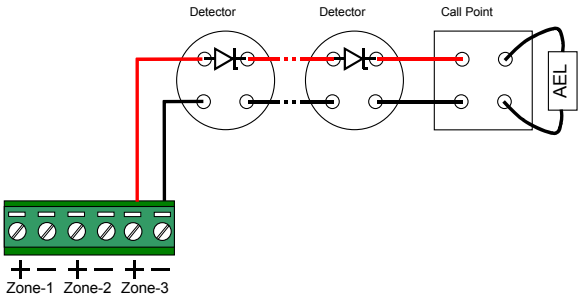
Observe polarity of connections!



2.3.4.4.2 Diode Base Arrangement

If the installation requires conformance to BS5839-1: 2002 Code of Practice regarding the supervision of removal of detectors and / or operation of call points when detectors are removed, then install the detectors using diode bases.

An Active-End-of-Line device is required instead of the 6800Ω resistor.



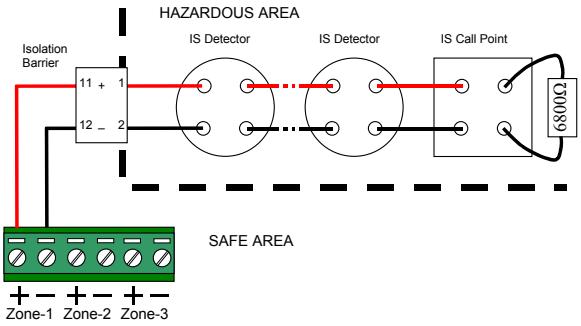
[1] TOTAL OUTPUT LOAD must not exceed panel supply rating – maximum 2A.
[2] AUX-2 also provides power for the Mxp-008 8-Way Relay card. This current must be subtracted from the total available AUX-2 power to give the available output power.

2.3.4.4.3 Intrinsic Safe Arrangement

The Zone Circuit can be configured for use with Intrinsic Safety detectors and barriers – see programming section.

The recommended isolation barrier is a PEPPERL+FUCHS Model: KFDO-CS-Ex1.51P or MTL Model: 5061

Only use intrinsic safe detectors and call points. The number of devices permitted and cables will depend on the IS classification – refer to the detector manufacturers' information for further details.



The End-of-line resistor used must be rated for the appropriate IS zone classification.

2.3.4.5 Sounder / Monitored Output Circuits

Three conventional 24V DC sounder style output circuits are provided.

18.0 – 28.0 V DC, 1.0A[3] max
SUPERVISED. POWER LIMITED.

The sounder outputs can be configured to turn on continuously or to pulse (1s ON / 1s OFF).

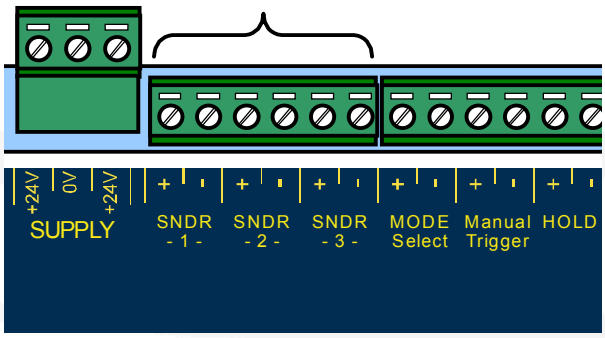
The sounder outputs are monitored for open and short circuit conditions using reverse polarity signals.

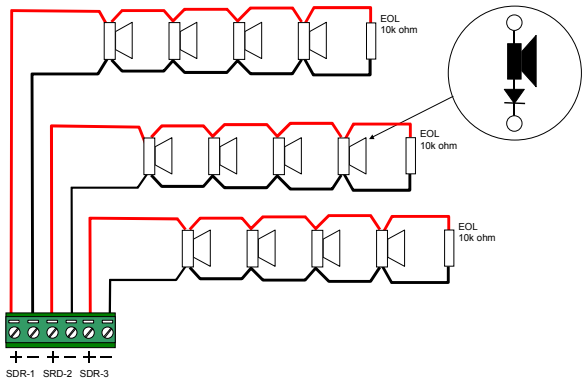
The outputs can be configured to be non-silencing for use with pilot valves, etc. (refer to section 3.3.2 for programming).

Sounder must be equipped with an in-built blocking diode that prevents the sounder from taking power when the output is in the supervising condition.

An End-of-Line Resistor (EOLR) of value 10,000Ω ½ Watt must be fitted to the last sounder / bell.

Ensure that cable of appropriate conductor size is used to maintain the required sounder operating voltage under the minimum battery voltage condition – see below for calculation.



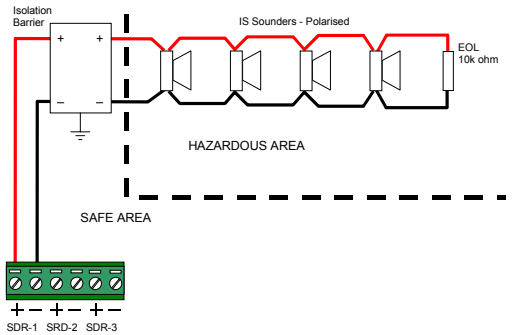


2.3.4.5.1 Intrinsic Safe Arrangement

The Sounder Circuit can be configured for use with Intrinsic Safety sounders and barriers.

The recommended isolation barrier is a MTL Model: 778ac

Only use intrinsic safe detectors and call points. The number of devices permitted and cables will depend on the IS classification – refer to the sounder manufacturers' information for further details.



[3] TOTAL OUTPUT LOAD (continuous) must not exceed panel supply rating – maximum 2A.

2.3.4.5.2 Sounder Circuit Lengths

The voltage drop on each alarm circuit should be calculated to ensure that the minimum voltage at the end of the circuit exceeds the minimum required by each sounding device at the minimum alarm circuit output voltage.

The voltage at the end of the circuit is given by:

Minimum Alarm Voltage = $V_{OUT(MIN)} – (I_{ALARM} \times R_{CABLE})$

Minimum Output Voltage ($V_{OUT(MIN)}$) is $V_{BAT(MIN)} – 1.0V = 20.0V$

Alarm Current (I_{ALARM}) is the sum of the loads presented by the sounding devices in alarm.

Cable Resistance (R_{CABLE}) is the sum of the cable resistance in both cores x cable length.

Cable Resistance (R_{CABLE}) for 1.0mm^2 is 0.036Ω / metre

Cable Resistance (R_{CABLE}) for 1.5mm^2 is 0.024Ω / metre

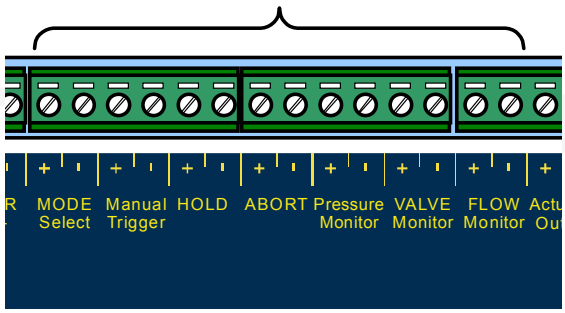
Cable Resistance (R_{CABLE}) for 2.5mm^2 is 0.015Ω / metre

Insulation Resistance (Core-Core and Core-Screen)	]2M Ω

2.3.4.6 Input Circuits

Seven Fixed function Input circuits are provided for the following functions:

MODE SELECT [Auto / Manual], MANUAL TRIGGER, HOLD, ABORT, PRESSURE MONITOR, VALVE MONITOR and FLOW MONITOR.

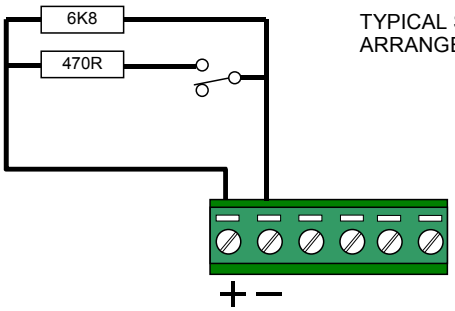


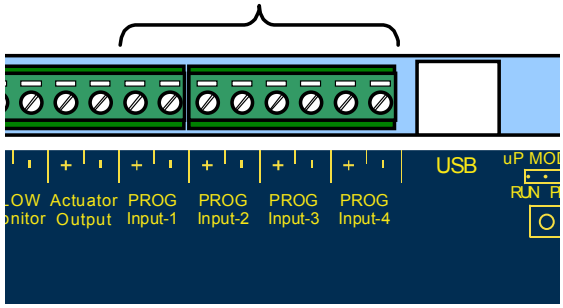
Four Programmable Function Input Circuits are provided.

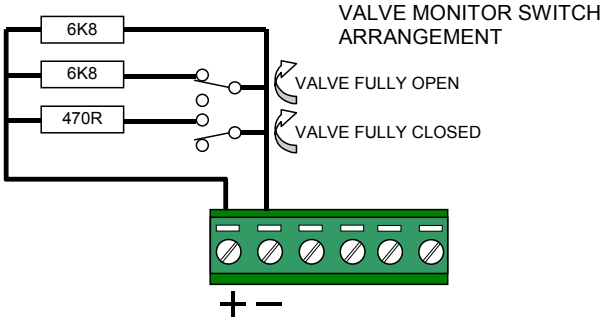
Each input circuit is monitored for open and short circuit conditions – see typical arrangement below.

EOL = 6800Ω. Maximum line impedance 50Ω.

Connect to volt-free switches / relay contacts only.







The VALVE MONITOR input is used to monitor the open / closed state of a mechanical valve control device.

If the valve is in an indeterminate state (neither fully open nor fully closed) for more than 30 seconds, the panel will indicate a fault condition.

If unused, connect a 3300Ω (or 2x 6800Ω in parallel) EOL across the terminals.

2.3.4.7 Actuator Output Circuit

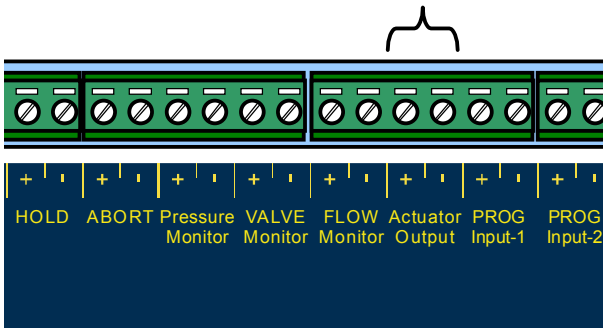
The actuator output can be used to drive both igniting (metron) style and solenoid style actuators.

18.0 – 28.0 V DC, 1.0A[4]
SUPERVISED. POWER LIMITED.

The circuit is monitored for both open and short circuit conditions.

The output can supply a continuous 1A current for solenoid style actuators or can provide a 3A (15mS) pulse for igniting style actuators.

Output type is configurable - refer to Programming section.

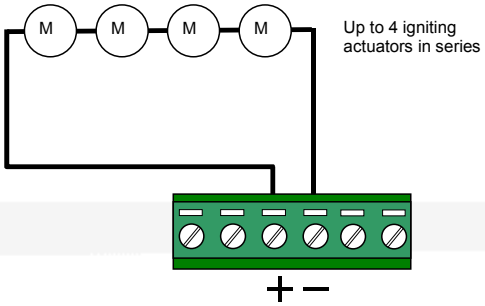


2.3.4.7.1 Igniting Actuators

The circuit is current limited and one to four igniting actuators can be wired in series without special requirements.

No additional resistance is required in the circuit

Maximum line impedance 7Ω including the internal resistance of the actuators.

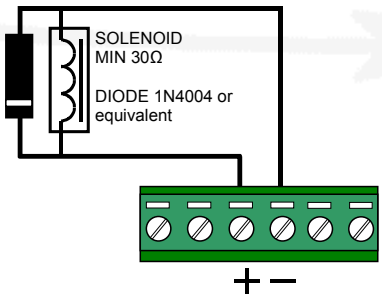


2.3.4.7.2 Solenoid Actuators

A Back-EMF diode must be fitted across the solenoid coil. Observe polarity – see diagram opposite.

Coil resistance 25Ω-200Ω.

Maximum line impedance 1.5Ω -5.0Ω depending on coil impedance – see calculation below.



2.3.4.7.3 Solenoid Actuator Circuit Lengths

The voltage drop on the actuator circuit should be calculated to ensure that the minimum voltage at the end of the circuit exceeds the minimum required by the solenoid (typically 18V) at the minimum actuator circuit output voltage.

The voltage at the end of the circuit is given by:

Minimum Actuator Voltage = $V_{OUT(MIN)} – (I_{ACTUATOR} \times R_{CABLE})$

Minimum Output Voltage ($V_{OUT(MIN)}$) is $V_{BAT(MIN)} – 1.5V = 19.5V$

Actuator Current ($I_{ACTUATOR}$) is the sum of the loads presented by the actuator devices.

Cable Resistance (R_{CABLE}) is the sum of the cable resistance in both cores x cable length.

Cable Resistance (R_{CABLE}) for 1.0mm^2 is 0.036Ω / metre

Cable Resistance (R_{CABLE}) for 1.5mm^2 is 0.024Ω / metre

Cable Resistance (R_{CABLE}) for 2.5mm^2 is 0.015Ω / metre

Insulation Resistance (Core-Core and Core-Screen)	]2M Ω

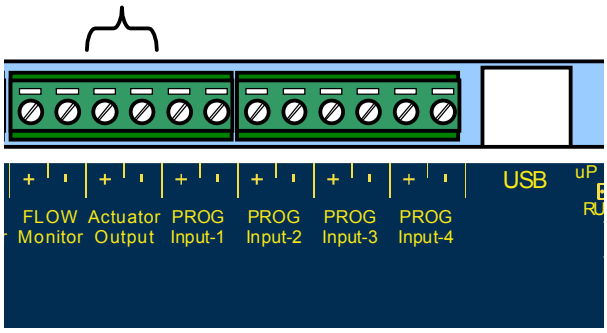
[4] TOTAL OUTPUT LOAD (continuous) must not exceed panel supply rating – maximum 2A.

2.3.4.8 USB

The USB socket is for connection to a Laptop or PC.

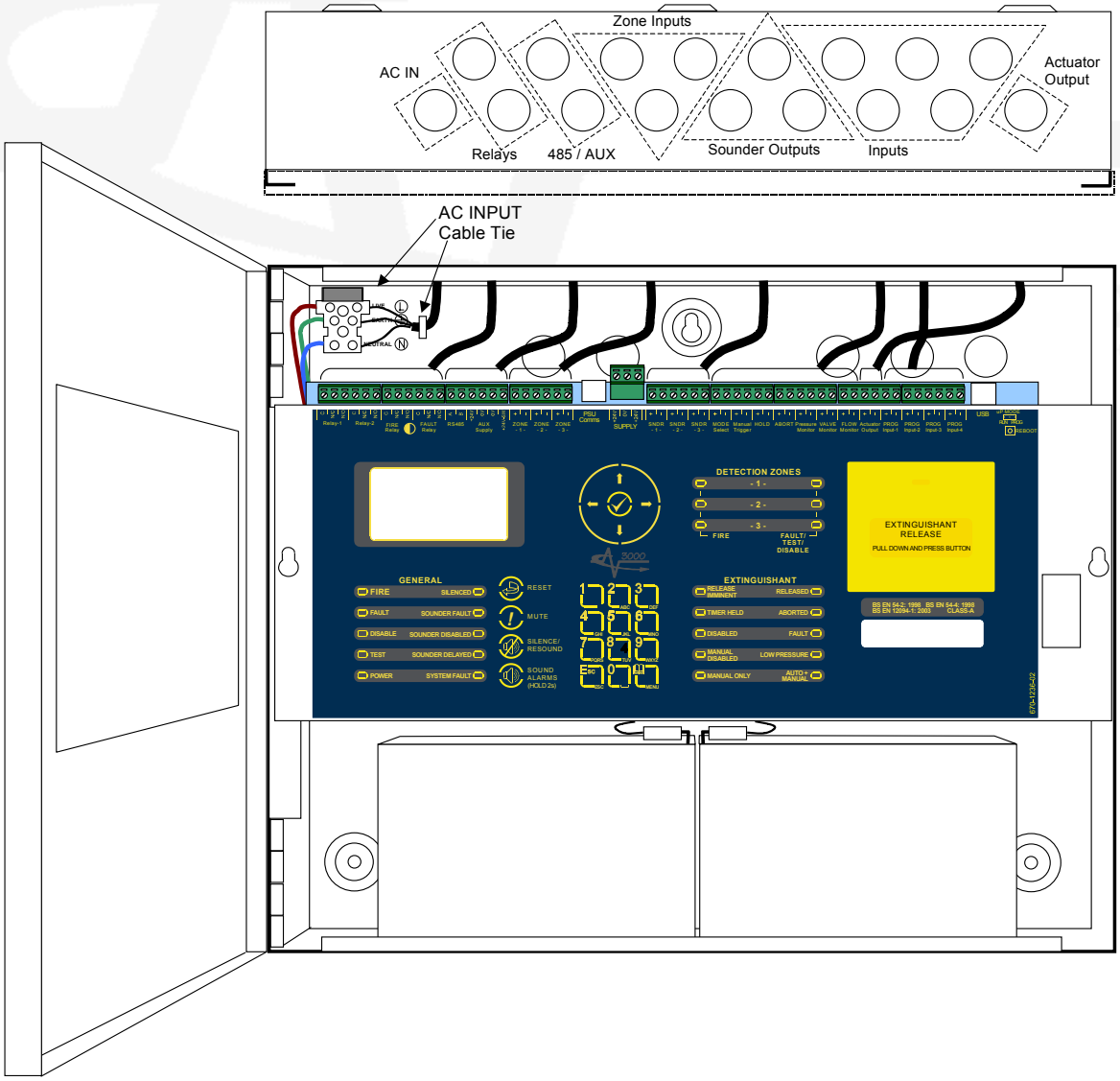
This can be used for upload of a new logo or download of the configuration and log files.

Refer to section 3.3.9 for further information.

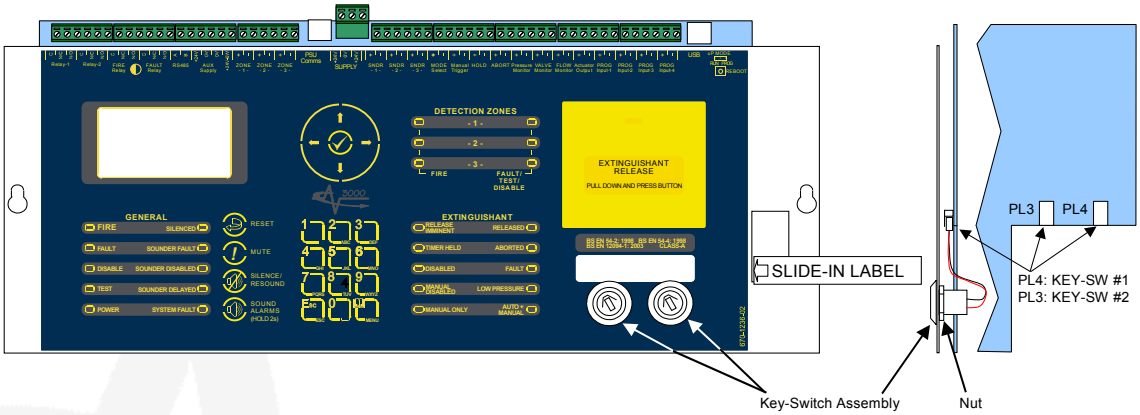


2.3.4.9 Recommended Cable Routing

The following diagram shows the recommended cable routing within the enclosure.



2.4 Key-Switch Installation



Using a sharp knife, cut through the fascia label using the key-switch mounting hole as a template.

Insert the key-switch assembly through the hole and secure with the fixing nut. Before fully tightening, insert the slide-in label with the required function description into the pocket in the fascia label.

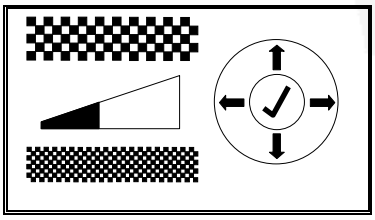
Plug the connector into the respective connector on the card.

Key-Switch assemblies are available in both trapped and non-trapped versions.

Refer to the Programming section to define the action of the key-switch.

2.5 Adjusting the LCD Contrast

Press the CONTRAST ADJUST button. This display will show the contrast adjust option.



Use the ↑↓ buttons to adjust the contrast (viewing angle) darker or lighter as required. The bar graph adjusts to show the contrast setting.

Press the 7 button to confirm the setting.

The display will then revert to the normal operating display.

2.6 Loading Calculations

2.6.1 Panel Loading

The Total Panel Load must not exceed the rating of the power supply. The power supply can deliver a 2A total load maximum.

The panel loading includes the panel itself (70/125mA), any power required for additional option modules and all external power required for the Input, Output and AUX circuits.

The backlight is turned off during AC supply failure (after 60 seconds). It turns on in Alarm or if the panel keys are pressed.

2.6.2 Battery Standby Calculation

	Quiescent Load			**Fire Alarm Load**		
Equipment	**I (A)**	**x**	**Total**	**I (A)**	**x**	**Total**
EX-3000 Panel	0.070[5]	1.0	= 0.070	0.125[6]	1.0	= 0.125
Mxp-008	0.000	1.0	=	0.065[7]	1.0	=
AUX #1 Supply Output[8]		1.0	=		1.0	=
AUX #2 Supply Output[8]		1.0	=		1.0	=
Sounder Output 1[9]					1.0	=
Sounder Output 2[9]					1.0	=
Sounder Output 3[9]					1.0	=
Actuator Output					1.0	=
Total	**ΣQuiescent Load**		=	**ΣAlarm Load**		=
	x 24 hr =		Ahr			
	x 72 hr =		Ahr	**2^{10} x 0.5 hr =**		Ahr
			↳ (carry forward) +			Ahr
	Total Load (Quiescent + Alarm) =					Ahr
	x 1.25[10] (Battery De-rating factor) =					**Ahr**

[5] Figure quoted is for mains fail condition (backlight off) – add 15mA for first hour of fault when the backlight is on.
[6] Figure quoted is for fire in mains fail condition – with Relay1, Relay 2 & Fire relay energised (backlight on).
[7] Figure quoted is for all relays on. 8mA per relay output on.
[8] Maximum 0.5A load per AUX. Calculate the required load for each auxiliary output in both the quiescent and alarm conditions. Refer to the technical information for each device that is to be powered from the panel AUX Output to determine the overall AUX loading currents. The sum of all these additional currents should be entered in these fields.
[9] Maximum 1.0A load per Sounder.
[10] The alarm load should be doubled to allow for changes in battery efficiency for loads in excess of the recommended C/20 discharge rate. The total load calculated should be multiplied by a de-rating factor of 1.25 to allow for changes in battery efficiency over time. The above calculation is in accordance with the recommendations in BS5839-1: 2002.

3 Programming

3.1 Introduction

These instructions cover the configuration and programming of the panels.

NOTE: The panel is delivered in a non-configured condition. In this mode (or if the panel is returned to factory default settings) the panel defaults to MANUAL ONLY mode of operation. After configuring the panel, use the Level 2 EXTINGUISH MODES menu option (or the configured key-switch / inputs) to set the panel into the AUTO+MANUAL mode.

3.1.1 Access Levels

The panel operation is protected from inadvertent and erroneous misuse by means of four access levels. These levels are as follows:

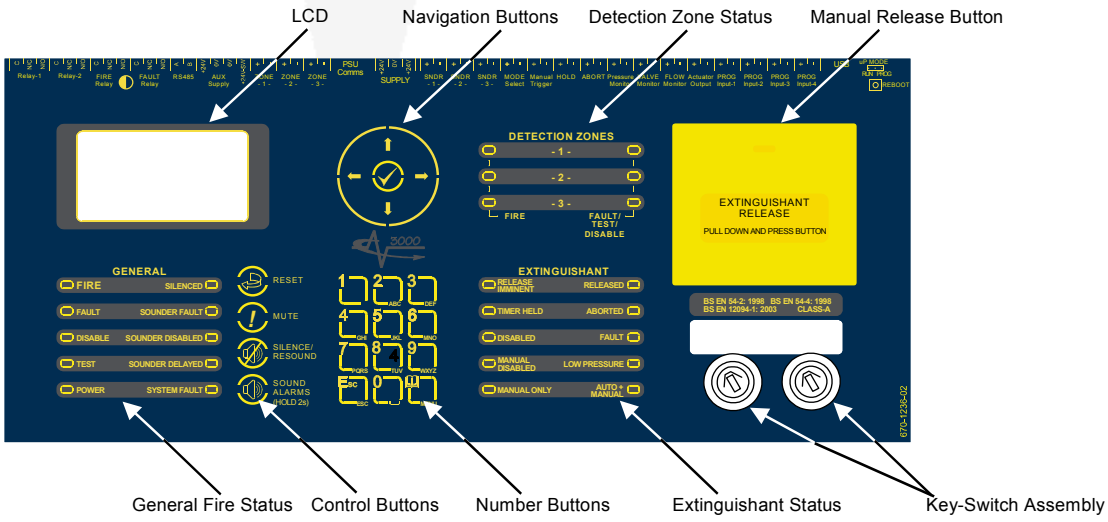
Level 1 Untrained user
Level 2 Authorised User
Level 3 Commissioning, Service and Maintenance
Level 4 Commissioning, Service and Maintenance – Special Tools Required

This document covers the Level 3 functions. For details on the operation and use of the panel at Levels 1 & 2, refer to User Manual 680-148. Full details are supplied with any special tools.

A level-3 password is required to enter the commissioning menus. For details of Passwords, refer to Section 3.3.6.

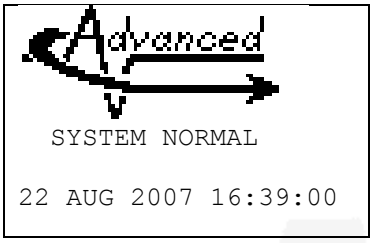
Level-3 Passwords.
If this number is lost, it is not possible to enter commission mode functions.
Refer to 5.1 for further information.

3.1.2 Front Panel Controls and Indications

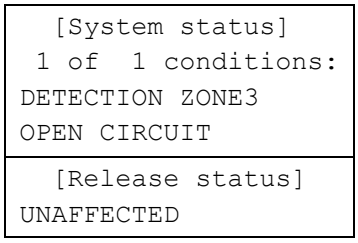


The LCD along with the LED Indicators shows the operating status of the system. Examples of the information presented is shown below:

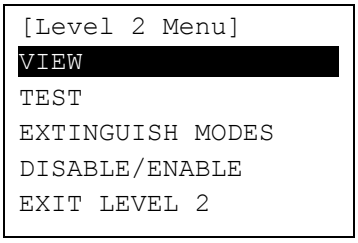
Normal Display



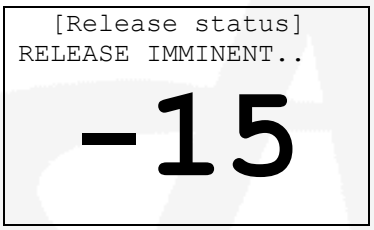
Non-normal Display



Typical Menu Display

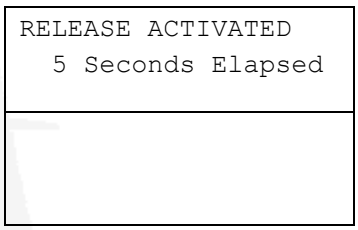


Release Imminent

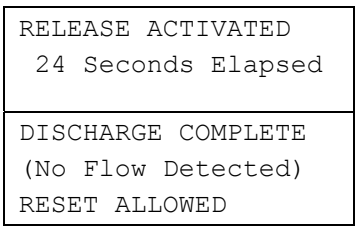


The display shows a countdown timer with the amount of time remaining before the extinguishant is released.

Release Activated

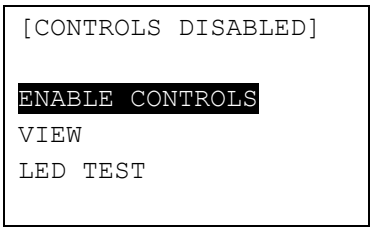


Release Complete

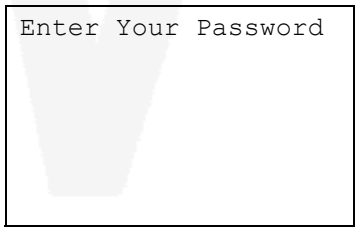


3.1.3 Enable Controls

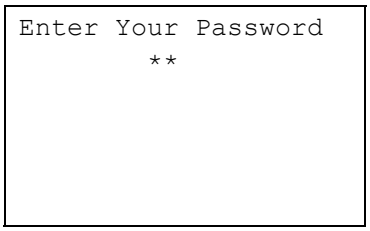
Controls are normally disabled. To access the menus, press the Menu button. The display shows the following:



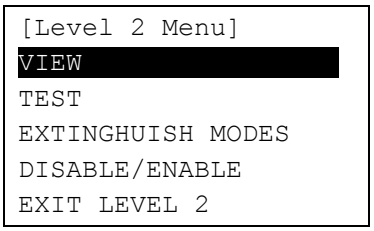
Press the 7 button to select the 'Enable Controls' option.



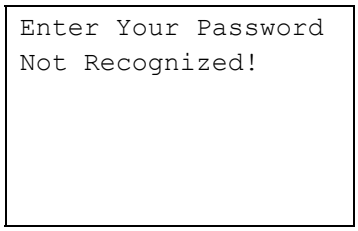
The display prompts for entry of the password.



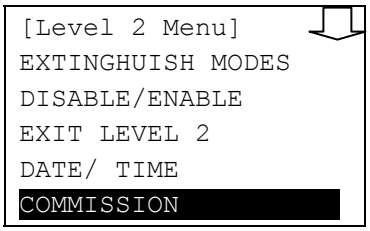
Enter the password. As each number is pressed, an * character is displayed. Finally, press the 7 button to confirm.



The display then shows the Level 2 Menu options.



If the password is incorrect (or if not entered in time) the above message is shown.



Scroll down to the Commission Menu

3.1.4 Navigating through menus

When a menu is displayed, use the ↑↓ buttons to highlight the required menu option and then press the 7 button to select it.

Press the **'Esc'** button from within a menu option to return to the previous menu.

The display will revert to the status mode display after 60 seconds on no activity (15 seconds in a fire alarm condition). Press the Menu button again to return to the menu option. A programmable timer can be configured to automatically cancel Level 2 access.

3.1.5 Numeric data entry

Numbers are entered by moving to the required field, and then typing in the required number, followed by the 7 button. The display returns to the previous menu.

If the number is entered incorrectly, press the ← button to clear the entry and then re-enter the required number. Alternatively, press the **'Esc'** button to cancel the number entry and return to the previous menu.

3.2 Recommended Programming Procedure

It is recommended that the configurable options be programmed in the following sequence:

- Configure General Options and Passwords
- Configure the Extinguishing Output Type and Cause & Effect Rule
- Configure the Detection Zone Input Circuits
- Configure the Alarm Outputs and Cause & Effect Rule
- Configure any other Input / Output Circuits

3.3 Level 3 Menu Functions

The following table gives a list of the Level 3 Menu Functions and a brief description for each function.

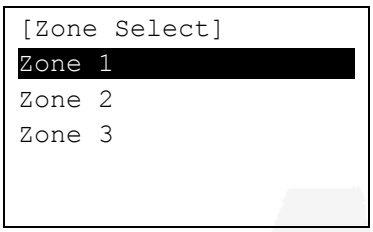
Menu Option		Sub Menu	Comments / Description
3	DETECTION	ZONE 1 ZONE 2 ZONE 3	Configuration of the Detection Zone Input Circuits
4	ALARM OUTPUTS	SOUNDER 1 SOUNDER 2 SOUNDER 3 PULSE PATTERN	Configuration of the Alarm Sounder Output Circuits and pulsing operation
2	EXTINGUISHING	OUTPUT SET-UP	Configuration of the Actuator Output Circuit
		CAUSE & EFFECT	Configuration of the release cause and effects rule
		EXTRACT SET-UP	Configuration of the Extract Output
5	INPUTS		Configuration of the Programmable Input Circuits
5	OUTPUTS		Configuration of the Programmable Output (Relay) Circuits
1	PASSWORDS		Configuration of the Engineer and User Passwords
1	GENERAL		Configuration of General parameters
5	STATUS INDICATORS		Configuration of any Remote Status Indicator Panels
	ENABLE P.C. LINK		Permits the connection of a PC for upload of a logo or download of the configuration and log files.
	EXIT		Leave the Commission Menu

To enter the Commissioning / Programming Menu, select the COMMISSION option in the Level 2 Menu and press the 7 button. The display prompts for the Level 3 password.

To exit from the Commissioning / Programming Menu, select the EXIT option and press the 7 button. The display prompts for the Level 3 password.

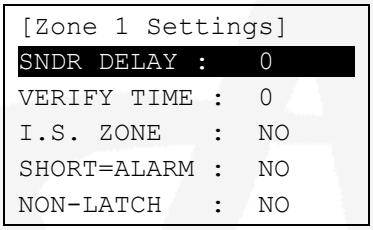
3.3.1 Detection Zones

This menu configures each of the three detection zone input circuits. Highlight the DETECTION option and press the 7 button. The following Zone Select Menu will be shown.



Use the ↑↓ buttons to highlight the required zone and then press the 7 button to select it.

A menu of parameters is then presented for the selected zone.



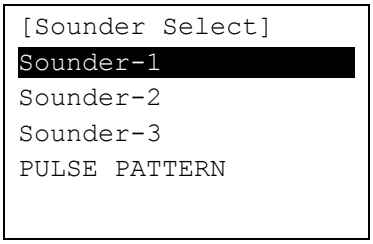
Use the ↑↓ buttons to highlight the required parameter and then press the 7 button to select / change it.

The table below details the parameters can be adjusted:

Parameter	Comments / Description	Options	Default Setting
SNDR DELAY	Determines if the sounders are to be delayed before operating when the panel detects a fire alarm from this zone.	0 – 600 seconds	0
VERIFY TIME	Determines the minimum time that the circuit must be in the alarm condition before an alarm condition is registered.	0 – 30 Seconds	0
I.S. ZONE?	Determines whether the circuit is for use with Intrinsic Safety Barriers.	NO / YES	NO
SHORT=ALARM?	Determines if a short circuit is to be treated as an alarm condition. If selected, the short circuit supervision on this circuit is disabled. Normally, AFD or MCP devices will switch the circuit into the alarm state via a 270Ω-470Ω resistor / equivalent load.	NO / YES	NO
NON-LATCH?	Determines if the panel should automatically reset from the alarm condition if the alarm is cleared.	NO / YES	NO

3.3.2 Alarms

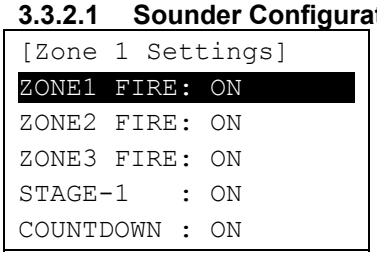
This menu configures each of the three alarm output circuits. Highlight the ALARM OUTPUTS option and press the 7 button. The following Sounder Select Menu will be shown.



Use the ↑↓ buttons to highlight the required sounder (or the pulse pattern option) and then press the 7 button to select it.

A menu of parameters is presented for the selected sounder.

3.3.2.1 Sounder Configuration



Use the ↑↓ buttons to highlight the required parameter and then press the 7 button to select / change it.

The table below details the parameters can be adjusted:

Parameter	Comments / Description	Options	Default Setting		
			SNDR1	SNDR2	SNDR3
ZONE 1 FIRE	Determines the response of the output to a fire alarm condition from this zone.	OFF, PULSED, ON	ON	ON	OFF
ZONE 2 FIRE	Determines the response of the output to a fire alarm condition from this zone.	OFF, PULSED, ON	ON	ON	OFF
ZONE 3 FIRE	Determines the response of the output to a fire alarm condition from this zone.	OFF, PULSED, ON	ON	ON	OFF
STAGE-1	Determines the response of the output when at least one of the qualifying conditions for release has been established.	OFF, PULSED, ON	ON	ON	OFF
COUNTDOWN	Determines the response of the output when the activated condition has been established and the ECD is in the Imminent Release phase.	OFF, PULSED, ON	ON	ON	PULSE
STAGE-2	Determines the response of the output when the actuator output activated condition has been established.	OFF, PULSED, ON	ON	ON	ON
SOUND ALARMS	Determines the response of the output when the front panel EVACUATE button is pressed.	OFF, PULSED, ON	ON	ON	ON
PULSE ON HOLD	Determines the response of the output when the hold button / input is active.	NO / YES	NO	NO	YES
MAY SILENCE	Determines the response of the output when the front panel SILENCE button is pressed. If set to NO, the output will not be turned off when the sounders are silenced.	NO / YES	YES	YES	YES

12094 ✓
Section 4.24

Triggering Signals to Equipment within the System.

The alarm outputs can be used / configured to transmit triggering signals to extinguishing system equipment such as pilot cylinders, warning devices, etc.

If required, the outputs can be non-silencing. These outputs can be disabled along with the sounders.

3.3.2.2 Pulse Pattern Configuration[11]

12094 ✓
Section 4.30

Activation of Alarm Devices with Different Signals.

Signals during the pre-discharge warning period should be intermittent and signals during the activated / released condition should be continuous.

In addition to turning the sounders ON, the sounders can be pulsed as an alert tone. Two separate pulse patterns can be configured.

```
[Pulse Pattern]
ALERT PULSE ON    1s
ALERT PULSE OFF   1s
HOLD  PULSE ON    1s
HOLD  PULSE OFF   2s
```

Use the ↑↓ buttons to highlight the required pulse period and then press the 7 button to select it.

A menu of parameters is presented for the selected sounder.

```
  [Number Entry]
Value: 1
Enter New Value:-
               0

Maximum: 7
```

The current on/off period is shown.

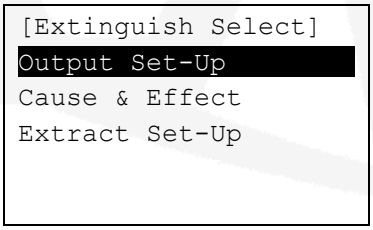
Enter a new on/off period as required.

[11] ON normally takes precedence over PULSE patterns. Exceptions: If the output is configured to pulse during the pre-discharge countdown or during a hold condition.

Parameter	Comments / Description	Options	Default Setting
ALERT PULSE ON	Specifies the Sounder ON period during an ALERT condition.	1 – 7 Seconds	1
ALERT PULSE OFF	Specifies the Sounder OFF period during an ALERT condition.	1 – 7 Seconds	1
HOLD PULSE ON [12]	Specifies the Sounder ON period during the HOLD condition.	1 – 7 Seconds	1
HOLD PULSE OFF [12]	Specifies the Sounder OFF period during the HOLD condition.	1 – 7 Seconds	2

3.3.3 Extinguishing

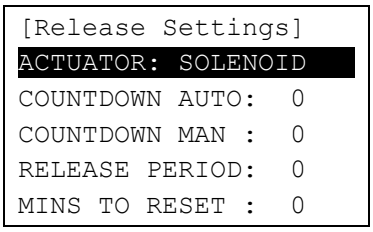
The Extinguishing Menu comprises three separate sub-menus. These cover the operating parameters of the actuator output (Output Set-Up), the fire alarm and manual conditions required to activate the output (Cause & Effect) and operating parameters for any Extract output (Extract Set-Up).



Use the ↑↓ buttons to highlight the required menu option and then press the 7 button to select it.

3.3.3.1 Output Set-Up

The display presents a menu of parameter options along with their current settings.



Use the ↑↓ buttons to highlight the required option and then press the 7 button to select it.

The table below details each available option.

Parameter	Comments / Description	Options	Default Setting
ACTUATOR	Specifies the type of actuating devices connected to the output.	METRON SOLENOID	NOT LEARNT
COUNTDOWN AUTO	Specifies the delay timer before activating the actuator output when the condition originates from AFD Zone inputs.	0 – 60 Seconds	30
COUNTDOWN MAN	Specifies the delay timer before activating the actuator output when the condition originates from any manual trigger input.	0 – 60 Seconds	30
RELEASE PERIOD	Specifies the duration of the actuating output signal.	0 – 600 Seconds	300
MINS TO RESET	Specifies the minimum time that must elapse before a reset can be performed after the activation condition has been established.	0 – 30 Minutes	10
HELD COUNTDOWN	Specifies whether the countdown time will restart or will continue for the remaining duration when the hold activation is removed.	RESTART COUNT SUSPEND COUNT[13] CONTINUE COUNT	RESTART
IN COUNTDOWN	Specifies whether a RESET can be performed during the countdown period.	ALLOW RESET [14] PREVENT RESET	PREVENT

[12] The mark to space ratio of the HOLD PULSE signal should be configured to create a different pattern to the standard Alert PULSE (1s ON / 1s OFF) pattern.
[13] This setting is not in accordance with BS EN 12094-1: 2003.

FLOW DETECTION	Specifies whether Flow Detection is in use. When set to ON, the “Released” condition will not be established if flow is not detected during the release period. The display will also show “No flow Detected”.	YES/NO[15]	YES

```
[Actuator Detection]

Fault-Free Wiring?
Press √ to learn
```

The actuator output type must be learnt.

Press the 7 button to proceed and the panel will analyse the circuit to determine the type of actuating device(s).

It will also analyse the circuit impedance. No other adjustments are necessary.

3.3.3.2 Cause and Effects Programming

The display presents a menu of parameter options along with their current settings.

```
[Extinguish C&E]
Release Active When:-
TWO Z1&Z2      : √
TWO Z1&Z3      : X
TWO Z2&Z3      : X
ALL Z1&Z2&Z3   : --
IMMEDIATE Z1   : --
IMMEDIATE Z2   : --
IMMEDIATE Z3   : --
```

Some options are mutually exclusive. Depending on the options selected, some options are inhibited and cannot be adjusted – the current setting is shown as ‘- -‘.

The settings only apply to the AFD inputs. A Manual Trigger input will immediately generate the activated condition.

If all three ‘Two Zone’ parameters are enabled then the activated condition is established when any two of the three zones are in the fire condition.

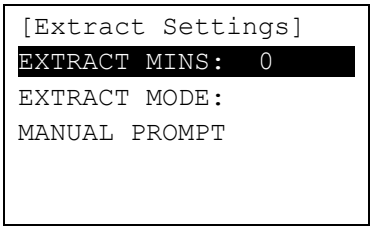
Use the ↑↓ buttons to highlight the required option and then press the 7 button to select it. The table below details each available option.

Parameter	Comments / Description	Options	Default Setting
TWO Z1&Z2	Determines if the activated condition is established by a fire condition in two zones – Zones 1 and 2.	7 , X, --	7
TWO Z1&Z3	Determines if the activated condition is established by a fire condition in two zones – Zones 1 and 3.	7 , X, --	X
TWO Z2&Z3	Determines if the activated condition is established by a fire condition in two zones – Zones 2 and 3.	7 , X, --	X
ALL Z1&Z2&Z3	Determines if the activated condition is established only when all three zone detection circuits are in a fire condition.	7 , X, --	--
IMMEDIATE Z1	Determines if the activated condition is established when a fire occurs on Zone 1	7 , X, --	--
IMMEDIATE Z2	Determines if the activated condition is established when a fire occurs on Zone 2	7 , X, --	--
IMMEDIATE Z2	Determines if the activated condition is established when a fire occurs on Zone 3	7 , X, --	--

3.3.3.3 Extract Set-Up

The display presents a menu of parameter options along with their current settings.

[14] This setting is not in accordance with BS EN 12094-1: 2003.
[15] When set to NO, the RELEASED condition is established at the instance the actuator output is turned on.
NOTE: Irrespective of the setting for this parameter, if a valid signal is received on the flow input circuit then a RELEASED condition will be established.

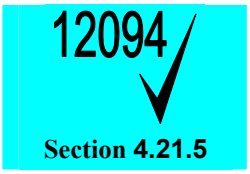


Use the ↑↓ buttons to highlight the required option and then press the 7 button to select it.

The table below details each available option.

Parameter	Comments / Description	Options	Default Setting
EXTRACT MINS	Specifies the duration of the extract signal following release of the extinguishant.	0 – 120 Minutes	0
EXTRACT MODE	Specifies whether the panel should prompt to start the extract phase or whether the extract output should turn on immediately following discharge.	MANUAL PROMPT AUOTMATIC	MANUAL PROMPT

3.3.3.4 Release Signal Termination (Test Function)



A special Engineer function is provided to terminate an extended active extinguishing control signal for the purposes of testing the system. This is provided at Level 2 using the EXTINGUISHING menu option. When prompted, enter the Level 3 password and a further option (STOP RELEASE: YES) is provided in the menu. Highlight this option and press the 7 button to turn off the extinguishing control signal output.

3.3.4 Inputs

The display presents a list of the programmable inputs along with their current settings.

```
[Input Settings]
PROG INPUT 1:
NOT IN USE
PROG INPUT 2:
NOT IN USE
PROG INPUT 3:
```

Use the ↑↓ buttons to highlight the required input and then press the 7 button to select / change it.

The table below details each available input and the programmable settings.

The default setting for all inputs is NOT IN USE.

Inputs
PROG INPUT 1
PROG INPUT 2
PROG INPUT 3
PROG INPUT 4
KEY-SWITCH 1
KEY-SWITCH 2

Setting Options	Comments
NOT IN USE	The Input is not used.
SOUND ALARMS	Activating an input with this setting will cause all sounder outputs to turn ON.
SILENCE ALARMS	Activating an input with this setting will cause all sounder outputs to be Silenced.
RESET	Activating an input with this setting will cause the panel to be reset (if permitted).
EXT. FAULT	Activating an input with this setting will register a fault condition on the panel.
MANUAL TRIGGER	Activating an input with this setting will initiate the manual release activated condition.
PRESSURE	Activating an input with this setting will register a pressure warning condition.
VALVE MON	Activating an input with this setting will register a Valve Monitor warning condition.
MODE SELECT	Activating an input with this setting will select MANUAL ONLY mode. Note: When multiple inputs are defined as mode select, then any switch in the active state will set the system into MANUAL ONLY mode.
HOLD	Activating an input with this setting will stop the activated condition countdown timer preventing the release of the extinguishant.
ABORT	Activating an input with this setting will abort the activated condition.
LEVEL-2 ACCESS	Activating an input with this setting will enable Level-2 Control Keys and Menu functions. A password is not required.
START EXTRACT	Activating an input with this setting will turn on any output configured as an Extract output. The output will remain on for the programmed time.
KEEP EXTRACT ON	Activating an input with this setting will turn on any output configured as an Extract output. The output will remain on irrespective of any programmed operation or times.

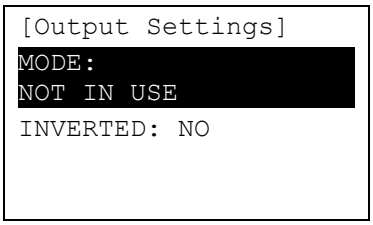
3.3.5 Outputs

The display presents a list of the programmable outputs along with their current settings.

```
[Prog. Outputs]
RELAY 1
  NOT IN USE
RELAY 2
* GENERAL FAULT
AUX RELAY 1
```

Use the ↑↓ buttons to highlight the required output and then press the 7 button to select / change it.

The table below details each available output and the programmable settings available. The output can also be configured as an INVERTED output (indicated by an * character. In this mode, it is normally turned on and will turn off when the applicable cause & effect occurs.



Use the ↑↓ buttons to highlight the required option and then press the 7 button to select / change it.

The default settings are as follows:

RELAY 1:	STAGE-1	[INVERTED = NO]
RELAY 2:	RELEASED	[INVERTED = NO]
AUX RELAY 1 – 8:	NOT IN USE	[INVERTED = NO]
SWITCHED AUX:	RESET	[INVERTED = YES]

Outputs
RELAY 1
RELAY 2
AUX RELAY 1
AUX RELAY 2
AUX RELAY 3
AUX RELAY 4
AUX RELAY 5
AUX RELAY 6
AUX RELAY 7
AUX RELAY 8
SWITCHED AUX

Setting Options	Comments
NOT IN USE	The Output is not used and will not activate.
FOLLOW SOUNDER 1	The output is activated when Sounder 1 is activated.
FOLLOW SOUNDER 2	The output is activated when Sounder 2 is activated.
FOLLOW SOUNDER 3	The output is activated when Sounder 3 is activated.
GENERAL FIRE	The output is activated if any fire condition event occurs.
GENERAL FAULT	The output is activated if any fault condition event occurs.
STAGE-1	The output is activated when a first stage alarm is recognized.[16]
STAGE-2	The output is activated when a second stage release is recognized and the actuator output is due to be operated.
RELEASED	The output is activated when the release of extinguishant has been completed.
ON HOLD	The output is activated when the release of extinguishant has been held.
ABORTED	The output is activated when the release is aborted. It remains in this state until the panel is reset.
MANUAL MODE	The output is activated when the manual only mode is selected. (In the off position the output indicates auto+manual).
VALVE CLOSED	The output is activated when the valve monitor is active.
RESET	The output is activated for approximately 10-15 seconds when the panel is reset.
ZONE1 or STAGE-2	The output is activated when a second stage release is recognized OR the fire alarm is from Zone 1.
ZONE2 or STAGE-2	The output is activated when a second stage release is recognized OR the fire alarm is from Zone 2.
ZONE3 or STAGE-2	The output is activated when a second stage release is recognized OR the fire alarm is from Zone 3.
EXTRACT	The output is activated when the extract phase is in process.
TEST MODE	The output is activated when any of the zones are in a test state.

3.3.5.1 Switched AUX Output

The Switched AUX Output is normally turned on and will turn off for about 5 seconds when the panel is reset. This is useful for resetting conventional beam detectors, etc.

SWITCHED AUX: RESET [INVERTED = YES]

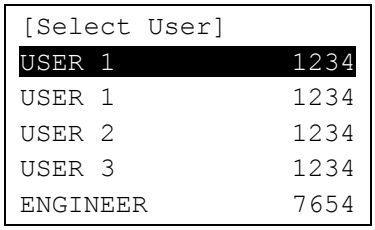
The output can alternatively be programmed to turn on when specific conditions occur to power external equipment. For example, turn on when Stage 1 is active.

SWITCHED AUX: STAGE-1 [INVERTED = NO]

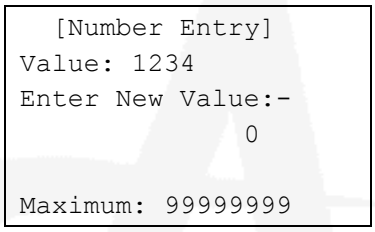
[16] NOTE: Stage-1 will also be activated as soon as an immediate Stage-2 condition (i.e. manual release or single zone fire alarm activation) occurs.

3.3.6 Passwords

The display presents a menu of user password options.



Use the ↑↓ buttons to highlight the required password and then press the 7 button to select / change it.



The current password is shown.

Enter a new password as required for the specific user.

Passwords can be up to Eight Digits long.

A time-out for Level 2 access can be configured – See Section 3.3.7 – if no buttons are pressed, the panel will then automatically cancel Level 2 access and return to Level 1 access when the time-out has elapsed.

3.3.6.1 Default Passwords

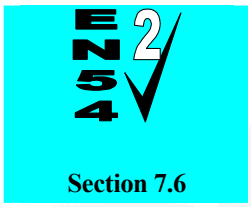
USER 1	1234
USER 2	1234
USER 3	1234
USER 4	1234
ENGINEERS CODE	7654

3.3.7 General Options

The display presents a menu of user general options.

Parameter	Comments / Description	Options	Default Setting
Level 2 Time Out	The Level 2 Time Out can be configured in the range 0 – 5 minutes (0 = No time out – stay in Level 2) After the timeout, the menu functions and user controls are inhibited. Password entry is required to re-enable these.	0 – 5 Minutes	5 Minutes
Earth Detection	Determines if the panel shall report earth detection faults.	YES/NO	YES
Config	Shows the checksum of the configuration memory. Option to erase the configuration (press the ➔ button).	> Erase Configuration	N/A
Program	Shows the current program version Press the ➔ button to show the program checksum.	> Show Checksum	N/A
Log	Determines the information that is recorded in the log. Standard+ Mode also records the return to normal transitions.	Standard, Standard+	Standard
Service Number	Determines the telephone contact number that is shown on the normal display when there is an acknowledged fault condition.	---	
Service Due Date	Determines the date/time at which a fault warning messages will be displayed to indicate service is overdue.	dd-mmm-yyyy hh:mm	06-01-2020 10:00
Mute	Determines if the panel permits the buzzer to be muted at Level 1 or if it can only be muted at Level 2.	LEVEL-1 LEVEL-2	LEVEL-1

Parameter	Comments / Description	Options	Default Setting
Reset Mode	Determines if the user is presented with the choice of resetting 'gas only' or 'fire & gas' on a reset , alternativley no menu is presented and 'fire & gas' are always reset.	PROMPT ALL	PROMPT
Daylight Saving	Used to turn on/ off daylight saving mode – which automatically shifts the current time forward/ backwards by 1 hour on programmed days of the year.	ON OFF	ON



Reset from the fire alarm condition.

For full compliance with both EN54-2 and EN12094-1 the 'PROMPT' option must be selected for Reset Mode. For compliance with only 12094-1 select the 'ALL' option. This option provides a single reset button action to reset the system (note reset is inhibited during the activation condition).

3.3.7.1 Daylight Saving Options

The display presents a menu of the daylight saving configuration.

Parameter	Comments / Description	Options	Default Setting
Enabled	Determines whether the daylight saving function is on or off. On means that the time will be shifted forwards & backwards by 1 hour, two times a year on the dates determined below.	ON OFF	ON
Forward Order	Specifies which occurance of the day specified (below) in the month specified (below) the time will be shifted forwards by 1 hour (at 2AM the time will change to 3AM).	1ST 2ND 3RD 4TH LAST	LAST
Forward Day	Specifies on which day of the week the time will be shifted forwards by 1 hour.	MON – SUN	SUN
Forward Month	Specifies in which month the time will be shifted forwards by 1 hour .	JAN – DEC	MAR
Back Order	Specifies which occurance of the day specified (below) in the month specified (below) the time will be shifted back by 1 hour (at 2AM the time will change to 1AM).	1ST 2ND 3RD 4TH LAST	LAST
Back Day	Specifies on which day of the week the time will be shifted back by 1 hour.	MON – SUN	SUN
Back Month	Specifies in which month the time will be shifted back by 1 hour.	JAN – DEC	OCT

3.3.8 Status Indicators

The display presents a list of the available remote status indicator addresses.

```
[Status Indicators]
RSI-1          UNUSED
RSI-2          UNUSED
RSI-3          UNUSED
RSI-4          UNUSED
RSI-5          UNUSED
```

Up to seven (7) RSI panels can be connected to the extinguishing panel.

Use the ↑↓ buttons to highlight the required RSI and then press the 7 button to select / change it.

```
[RSI-1 Settings]
ACTIVE: NO
INPUT-1:
 NOT IN USE
INPUT-2:
 NOT IN USE
```

Up to seven (7) RSI panels can be connected to the extinguishing panel.

Use the ↑↓ buttons to highlight the required RSI function and then press the 7 button to select / change it.

Parameter	Comments / Description	Options	Default Setting
ACTIVE	Determines if an RSI at this address is connected.	NO / YES	NO
INPUT-1	Determines the action if this input	See Section 3.3.4	NOT IN USE
INPUT-2	Determines the action if this input	See Section 3.3.4	NOT IN USE
KEYSWITCH	Determines the action if this input	See Section 3.3.4	NOT IN USE
OUTPUT-1 [17]	Determines the action if this output	See Section 3.3.5	NOT IN USE
OUT-1 INVERT	Determines whether the output is inverted (normally on)	NO / YES	NO
OUTPUT-2 [17]	Determines the action if this output	See Section 3.3.5	NOT IN USE
OUT-2 INVERT	Determines whether the output is inverted (normally on)	NO / YES	NO
BUZZER	Determines if the buzzer is in use or not at this RSI	NO / YES	YES
TICK=MUTE	Detemined if the buzzers in the panel and all other RSI can be muted from this RSI.	NO / YES	YES

3.3.9 Enable PC LINK

The ENABLE PC LINK menu option allows a PC to be connected to the panel for upload / download.

```
[USB Port Enabled]

CURRENT STATUS:
IDLE
```

The display shows the current status of the link. Possible status messages are:

LOGO UPDATE (< PC)

EVENT DATA TRANSFER (> PC)

CONFIG DATA TRANSGER (> PC)

NOTE: When this function is enabled and in use, any fault reporting of power supply (PSE) fault conditions is temporarily suspended.

3.3.10 Exit

To exit from the Commissioning / Programming Menu, select the EXIT option and press the 7 button. The display prompts for the Level 3 password.

[17] The optional 2-Way Relay card (Mxp-007) must be installed in the RSI for these outputs.

4 Service and Maintenance

4.1 Maintenance Schedule

This equipment should be maintained in accordance with the regulations and codes appropriate to the country and location of installation. The following is recommended if no other regulations apply.

4.1.1 Daily Actions

The site operator / user should perform the following checks and actions:

a) The panel indicates normal operation. If any faults exist, these should be recorded in a logbook.

b) Any recorded faults have received attention and have been signed off.

4.1.2 Monthly Actions

The site operator / user should perform the following checks and actions:

a) Any stand-by generators should be started and fuel levels checked.

b) Operate at least one call point or detector (from different zones each month) and check that the panel enters a fire alarm condition and that the appropriate / programmed alarm or warning devices are sounded / operated. Where permissible, this should include any links to the fire brigade or remote centre.

c) Check that all outstanding faults have been recorded and have received attention.

4.1.3 Quarterly Actions

The service / maintenance contractor should perform the following checks and actions:

a) Check that all entries in the logbook have been addressed, check the event log in the panel and take the necessary remedial actions.

b) Visually inspect the panel for any moisture ingress or other deterioration, check all battery connections and test / check the alarm, fault and other functions of the panel operation.

c) Ascertain if any building or structural alterations have been carried out that would affect the placement / location of call points or detectors. If so, perform a visual inspection.

d) Record in the logbook any defects or remedial actions that must be undertaken and arrange for these to be carried out as soon as possible.

4.1.4 Annual Actions

The service / maintenance contractor should perform the following checks and actions:

a) Perform the checks as recommended above in the daily, monthly and quarterly schedules.

b) Perform a complete “Walk Test” of the system to check that each call point and detector is operating to its manufacturers’ specification.

c) Visually inspect all cable fittings. Check that the equipment is undamaged and that the conditions of installation have not changed such that they fall outside of the equipment specifications.

d) Inspect and test all batteries and replace as required – refer to Section 4.2 for recommended replacement schedule.

e) Record in the logbook any defects or remedial actions that must be undertaken and arrange for these to be carried out as soon as possible.

4.2 Replacement of Components

In general, all of the components parts used in the construction of the panel have been selected for long life and reliability.

However, certain components may require to be changed on a regular service basis. The details of these are as follows:

4.2.1 Batteries

For battery installation, see section 2.3.2

Respect the Environment.
Batteries must be disposed of responsibly and in accordance with any local regulations.

Expected Life:	-	3-5 years at an ambient temperature of 20°C
Replacement Schedule:	-	As above. However, note that the expected battery life is shortened by increase in ambient temperature. The life reduces by 50% for every 10°C rise above ambient. Refer to battery manufacturer for further information.

Manufacturer / Part Numbers: -	YUASA		POWERSONIC	
	4AH	NP4-12	5AH	PS-1250-F1
	7AH	NP7-12	7AH	PS-1270

For optimum performance and charge retention, Yuasa recommend that batteries are ‘top-charged’ prior to installation.

For batteries up to 6 months old from date of manufacture, charge at 2.4V per cell (i.e. 14.4V per battery) for 20 hours prior to installing the batteries.

It is not recommended to use batteries that are more than 6 months old, from their date of manufacture, on a new installation.

It is quite normal for lead-acid batteries to vent hydrogen when being charged.

The panel is adequately ventilated to dissipate this hydrogen. DO NOT seal the enclosure or install in a sealed enclosure or cavity.

4.2.2 Liquid Crystal Display

Expected Life:	-	> 10 years
Replacement Schedule:	-	When the display becomes difficult to read. The display contrast will gradually fade with time.

2- Replace the complete circuit card assembly.

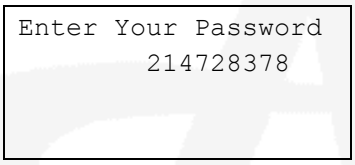
5 Appendices

5.1 Appendix 1 – Forgotten Level 3 Password

Should the Level-3 password be forgotten, contact Customer Support to obtain a temporary permit number to regain access to the panel programming functions.

Customer Support will require a decryption key displayed by the panel. To obtain this number, attempt to gain access to the Level-3 Programming Functions entering "**1**" when prompted for the password. As soon as the "Password Invalid" message is shown, press the "**0**" button and the display will show a decryption key. Make a note of the first part of this number.

For example:



Customer Support will provide a temporary permit number that you can enter when prompted for the Level-3 password. As soon as access has been regained to the Level-3 Programming Functions, select the Passwords Menu Option and check / change the Level-3 password. (Refer to Section 3.3.6 for further information).

5.2 Appendix 2 – Compatible Devices

5.2.1 Detectors

Manufacturer	Part Number	Description	№ / Zone
Apollo	55000-215	Series-65 Ion smoke	10
	55000-216	Series-65 Ion smoke	10
	55000-217	Series-65 Ion smoke	10
	55000-218	Series-65 Ion smoke (Integrating)	10
	55000-219	Series-65 Ion smoke (Integrating)	10
	55000-220	Series-65 Ion smoke (Integrating)	10
	55000-315	Series-65 Photo-smoke	10
	55000-316	Series-65 Photo-smoke	10
	55000-317	Series-65 Photo-smoke	10
	55000-120	Series-65 Heat A1R	10
	55000-121	Series-65 Heat A1R	10
	55000-122	Series-65 Heat A1R	10
	55000-125	Series-65 Heat BR	10
	55000-126	Series-65 Heat BR	10
	55000-127	Series-65 Heat BR	10
	55000-130	Series-65 Heat CR	10
	55000-131	Series-65 Heat CR	10
	55000-132	Series-65 Heat CR	10
	55000-135	Series-65 Heat CS	10
	55000-136	Series-65 Heat CS	10
	55000-137	Series-65 Heat CS	10
Apollo	ORB-OP-12001-APO	ORBIS Photo-smoke	10
	ORB-OH-13001-APO	ORBIS Multi-sensor	10
	ORB-HT-11001-APO	ORBIS A1R Heat	10
	ORB-HT-11002-APO	ORBIS A2S Heat	10
	ORB-HT-11003-APO	ORBIS BR Heat	10
	ORB-HT-11004-APO	ORBIS BS Heat	10
	ORB-HT-11005-APO	ORBIS CR Heat	10
	ORB-HT-11006-APO	ORBIS CS Heat	10
ARGUS	Aurora-DN	Photo smoke	10
	Aurora-TN	Heat (RoR)	10
	Aurora-DTN	Multi	10
	Argo	Heat (58deg Fixed)	10
Hochiki	SLR-E/SLR-E3	CDX Photo-smoke	10
	SIJ-E	CDX Ion smoke	10
	DCD-1E/DCD-AE3	CDX Heat	10
	DCD-2E	CDX Heat	10
	DCD-1RE/DCD-CE3	CDX Heat	10
	DFG-60E	CDX Heat	10
	DFJ-60E/DFJAE3	CDX Heat	10
	DFJ90-E/DFJCE3	CDX Heat	10

	SPB-ET	CDX Beam	2
	SRA-ET	CDX Beam	2
Nittan	EVC-P	Evolution Photo-smoke	10
	EVC-H-A2S	Evolution Heat	10
	EVC-H-CS	Evolution Heat	10
Nittan	2SC-LS	Sensortec Heat R-O-R	10
	NFD-68P	Sensortec U.V. Flame	3
	2RA-P	Sensortec Dual I.R flame	10
	NHD-G1, G2, GH1	Sensortec Heat Detectors	10
	ST-I	Sensortec Ion smoke	10
	ST-P	Sensortec Photo-smoke	10
	STA-D5	Sensortec Duct smoke	10
System Sensor	ECO1002	ECO1000 Heat/ Photo	4
	ECO1003	ECO1000 Photo-smoke	10
	ECO1004T	ECO1000 Heat (78deg Fixed)	10
	ECO1005	ECO1000 Heat (RoR)	10
	ECO1005T	ECO1000 Heat (58deg Fixed)	10
System Sensor	2351TEM	Series-300 Multi	10
	2351E	Series-300 Photo-smoke	10
	5351TE	Series-300 Heat	10
	4351E	Series-300 Heat	10
	5351E	Series-300 Heat	10

5.3 Appendix 3 – Recommended Cables

5.3.1 Fire Rated Cables

For best performance, the prefered cables are 2-core twisted with overall shield.

Manufacturer (In alphabetical order)	**Cable Type**	Core Sizes (mm)			5839-1 Rated		RS 485
		1.0	1.5	2.5	S (30)	E (120)	
AEI	Firetec Multicore Standard. FS2C	-	✓	✓	✓		✓[18]
AEI	Firetec Multicore Enhanced Ref. FE2C	-	✓	✓		✓	✓[18]
AEI	Firetec Armoured Ref. F2C	-	✓	✓			✓[18]
Calflex	Calflam CWZ	-	-	✓			
Cavicel SpA	Firecel SR/114H [19]	✓	✓	✓	✓		✓[19]
Cavicel SpA	Firecel SR/114E [19]	✓	✓	✓		✓	✓[19]
Draka	Firetuf (OHLS) FTZ	✓	✓		✓		✓
Draka	Firetuf PLUS	✓	✓	✓		✓	✓
Draka	Firetuf Power (Armoured)	-	✓	✓			
Draka	Firetuf Data 1-Pair 0.63mm	-	-	-			✓
Huber & Suhner	Radox FRBS/M1x2	-	✓	✓			✓
Irish Driver-Harris Co Ltd	Kilflam 2000	✓	✓	✓	✓		
Irish Driver-Harris Co Ltd	Kilflam 3000	✓	✓	✓		✓	
Prysmian (Pirelli)	FP200 Flex	✓	-	-			✓
Prysmian (Pirelli)	FP200 Gold	✓	✓	✓	✓		✓
Prysmian (Pirelli)	FP PLUS	✓	✓	✓		✓	
Prysmian (Pirelli)	FP400 (Steel wire armoured)	-	✓	✓			
Tratos Cavi SpA	FIRE-safe TW950	✓	✓	✓	✓		
Tyco Thermal Controls	Mineral Insulated Twin Twisted PYRO-E CCM2T	✓	✓	✓			✓
Tyco Thermal Controls	Pyrotenax Served Mineral Insulated Cable (light and heavy duty)	✓	✓	✓		✓	
Tyco Thermal Control	Pyro-S	✓	✓	✓	✓		
Wrexham	Mineral Insulated Cable (light and heavy duty)	✓	✓	✓		✓	

5.3.2 Non-Fire rated cables

Suitable for the RSI RS485 Link. For best performance, the prefered cables are 2-core twisted with overall shield.

Manufacturer	**Model**	**Cable Type**
Alpha & BICC	Alpha 2421, BICC H8093	Screened Twisted Pair 18 AWG Type 2
Alpha & BICC	Alpha 2411, BICC H8091	Screened Twisted Pair 20 AWG Type 2:
Belden	8205	Unscreened Twisted Pair 20 AWG (0.5 mm²) Belden
Belden	8461	Unscreened Twisted Pair 18 AWG (0.8mm²) Belden
Belden	8760	Screened Twisted Pair 18 AWG (0.79mm²) Belden
Belden	8762	Screened Twisted Pair 20 AWG (0.56mm²) Belden
Belden	9802	Screened Twisted Pair 20 AWG Type E buried distribution wire **[20]

[18] 1.5mm² only.

[19] Also available in steel wire armoured (SWA) and steel wire braid (SWB) formats. 1.0mm² preferred for network.

[20] Twisted pair cable suitable for use underground (NB NOT SINGLE WIRE ARMOURED)

5.4 Appendix 4 – Troubleshooting

Symptom	Cause/ Solution
The display shows the condition “ACTUATOR CIRCUIT” “ NOT READY”	This indicates that the actuator type has not been ‘learnt’ – or that a wiring fault caused the learn process to be aborted. The control panel must determine the exact characteristics of the actuator and wiring connected to the Actuator terminals. This is carried out from the commissioning menu:- COMMISSIONING->EXTINGUISHING->OUTPUT SET_UP. Refer to section 3.3.3.1.
The display shows the condition “ACTUATOR CIRCUIT” “SHORT CIRCUIT” or “OPEN CIRCUIT”	1. Wiring fault on the actuator circuit – check wiring. 2. The wiring or actuator used has been changed/ modified. Re-learn the new actuator characteristics – see section 3.3.3.1.
After commissioning, the control panel appears to be stuck in **Manual Only Mode**. I have no key-switches fitted/ activated.	The factory settings of the control panel mean that the level-2 menu mode select function defaults to Manual Only Mode – to avoid inadvertant triggering during installation. Change the level-2 menu mode from the following menu:- Level 2 Menu->EXTINGUISHIN MODES->TRIGGER (select ‘AUTO+MANUAL’). Note that if factory settings are restored, from the commissioniong menu, the Manual Only Mode will automatically be re-instated.
I can’t reset the control panel during the pre-discharge countdown.	As default, resetting the gas release during the countdown is prevented (to comply with EN12094-1). A configuration setting can be changed to allow reset during this time – see section 3.3.3.1 (IN COUNTDOWN setting).
When testing the system I have to wait until the reset allowed time has elapsed.	By entering the engineers code to select the EXTINGUISH MODES menu from the Level-2 Menu, an option ‘STOP RELEASE’ is presented – select this option to cancel the current activation sequence (allow a reset).
The display shows the condition “VALVE MONITOR INPUT” “VALVE STUCK”	Note that the Valve monitor Input requires a different End Of Line resistor value for the ‘normal’ condition. If no valve is being monitored fit two 6.8K Ohms resistors in parallel across the terminals (or a single 3.3K Oms resistor).

This page is intentionally left blank.

CE	
EN 12094-1: 2003 Electrical automatic control and delay device Environmental class: A 1 Flooding Zone CO_2 Low pressure CO_2 High pressure Inert gas systems Provided options: - Delay of extinguishing signal - Monitor Flow of Extinguishing Agent - Monitoring of status of components - Emergency Hold Device - Control of flooding time: 0 – 600s - Manual Only Mode - Triggering Signals to Equipment within the System - Triggering Signals to Equipment outside the System - Emergency Abort Device - Activation of Alarm Devices with Different Signals Response delay activated condition maximum 3s Response delay triggering of outputs maximum 1s	
EN54-2: 1997 +A1 Control and indicating equipment for fire detection and fire alarm systems for buildings Provided options: - Outputs to Fire Alarm Devices - Alarm Counter - Test Condition	
EN54-4: 1997 +A2 Power supply equipment for fire detection and fire alarm systems for buildings	
Ex-3001	

34 Moorland Way : Nelson Park : Cramlington
Northumberland : NE23 1WE
Tel: +44 (0)1670 707 111
Fax: +44 (0)1670 707 222
www.Advel.co.uk Email: Sales@Advel.co.uk